[Abstract]

[Problem] To provide an information processor, a method, and memory media, capable of printably obtaining information relating to contents of broadcasting as needed, while preventing viewing of the broadcasting from being blocked, without requiring bothersome operations.

[Means for Solving the Problem] A relevant data file is downloaded from a URL extracted from text data received as text broadcast data and decoded or a text obtained from a television display screen by a text recognition process, and when the data file is suitable for printing, it is added and registered on a printable file list and an LED 15 is lit. When a print starting button 13a is pressed, contents of the file are printed. When the related data file is not suitable for printing, a link file is extracted up to a certain level of hierarchy from link information in the file, and when the link file is suitable for printing, it is added and registered on the printable file list.

[Scope of Claims]

[Claim 1] An information processor for receiving broadcast data and receiving relevant data relating to the broadcast data, comprising:

a positional information extracting unit that extracts positional information indicating a position of the relevant data relating to the broadcast data from the received broadcast data;

a relevant data obtaining unit that obtains the relevant data based on the positional information extracted by the positional information extracting unit;

a print adequacy determining unit that determines whether the relevant data obtained by the relevant data obtaining unit is suitable for printing or not; and

an output unit that outputs the relevant data determined as suitable for printing by the print adequacy determining unit.

[Claim 2] The information processor according to claim 1, comprising a printing unit that prints the relevant data output by the output unit.

[Claim 3] The information processor according to claim 1 or 2, wherein the broadcast data includes text broadcast data, and the positional information extracting unit extracts the positional information from received teletext broadcast data.

[Claim 4] The information processor according to claim 1 or 2, wherein the broadcast data includes image data, and the positional information extracting unit extracts the positional information by recognizing a text portion from a display screen

on which the image data is displayed by a text recognition process.

[Claim 5] The information processor according to any one of claims 1 to 4, wherein the positional information is address information on a network, and the relevant data obtaining unit obtains the relevant data through the network.

[Claim 6] The information processor according to any one of claims 1 to 5, wherein when the print adequacy determining unit determines that the obtained relevant data is not suitable for printing, the unit obtains other relevant data by following link information included in the relevant data to determine whether the obtained other relevant data is suitable for printing or not, and the output unit outputs the other relevant data determined as suitable for printing by the print adequacy determining unit.

[Claim 7] The information processor according to claim 6, wherein hierarchy of the link information to be followed by the print adequacy determining unit for obtaining the other relevant data is specified by a user.

[Claim 8] The information processor according to any one of claims 1 to 7, wherein a format of the relevant data to be determined as suitable for printing by the print adequacy determining unit is set by the user.

[Claim 9] The information processor according to any one of claims 1 to 8, comprising an informing unit that informs the user of presence of printable relevant data before the output unit outputs the relevant data, wherein the output unit executes output only when receiving an output executing instruction from

the user.

[Claim 10] The information processor according to claim 9, comprising a display unit that preview-displays contents of the printable relevant data before the output unit outputs the relevant data.

[Claim 11] An information processing method for receiving broadcast data and receiving relevant data relating to the broadcast data, comprising:

a positional information extracting step for extracting positional information indicating a position of the relevant data relating to the broadcast data from the received broadcast data;

a relevant data obtaining step for obtaining the relevant data based on the positional information extracted in the positional information extracting step;

a print adequacy determining step for determining whether the relevant data obtained in the relevant data obtaining step is suitable for printing or not; and

an outputting step for outputting the relevant data determined as suitable for printing in the print adequacy determining step.

[Claim 12] The information processing method according to claim 11, comprising a printing step for printing the relevant data output by the outputting step.

[Claim 13] The information processing method according to claim 11 or 12, wherein the broadcast data includes teletext broadcast data, and the positional information extracting step extracts

the positional information from received text broadcast data.

[Claim 14] The information processing method according to claim 11 or 12, wherein the broadcast data includes image data, and the positional information extracting step extracts the positional information by recognizing a text portion from a display screen on which the image data is displayed by a text recognition process.

[Claim 15] The information processing method according to any one of claims 11 to 14, wherein the positional information is address information on a network, and the relevant data obtaining step obtains the relevant data through the network.

[Claim 16] The information processing method according to any one of claims 11 to 15, wherein when the print adequacy determining step determines that the obtained relevant data is not suitable for printing, the step obtains other relevant data by following link information included in the relevant data to determine whether the obtained other relevant data is suitable for printing or not, and the outputting step outputs the other relevant data determined as suitable for printing by the print adequacy determining step.

[Claim 17] The information processing method according to claim 16, wherein hierarchy of the link information to be followed by the print adequacy determining step in order to obtain the other relevant data, is specified by a user.

[Claim 18] The information processing method according to any one of claims 11 to 17, wherein a format of the relevant data to be determined as suitable for printing by the print adequacy

determining step is set by the user.

[Claim 19] The information processing method according to any one of claims 11 to 18, comprising an informing step for informing the user of presence of printable relevant data before the outputting step outputs the relevant data, and the outputting step executes output only when receiving an output executing instruction by the user.

[Claim 20] The information processing method according to claim 19, comprising a displaying step for preview-displaying the contents of the printable relevant data before the outputting step outputs the relevant data.

[Claim 21] Memory media for storing a program used in an information processing method for receiving broadcast data and receiving relevant data relating to the broadcast data, storing:

a code of a positional information extracting step for extracting positional information indicating a position of the relevant data relating to the broadcast data from the received broadcast data;

a code of a relevant data obtaining step for obtaining the relevant data based on the positional information extracted by the code of the positional information extracting step;

a code of a print adequacy determining step for determining whether the relevant data obtained by the code of the relevant data obtaining step is suitable for printing or not; and

a code of an outputting step for outputting the relevant data determined as suitable for printing by the code of the print adequacy determining step.

[Claim 22] The memory media according to claim 21, storing a code of a printing step for printing the relevant data output by the code of the outputting step.

[Detailed Description of the Invention]

[0001]

[Field of the Invention] The present invention relates to an information processor, a method, and memory media, such as an Internet television receiving broadcast data to display on a display or the like and receiving relevant data relating to the broadcast data.

[0002]

[Conventional Technology] Recently, utilization of the Internet, which is an assembly of networks globally connected to each other, is increased, and especially, a file browsing service so-called the World-Wide Web (WWW) becomes popular not only in universities and offices but also in homes. In the WWW service, a WWW server publishes files on the Internet, and the user browses the files on a terminal device of a client using a WWW browser.

[0003] A document in Hyper Text Markup Language (HTML) being the most popular file format and in an extensible Mark-up Language (XML), which is expected to be popular in future, have a function so-called link, which combines the same to another document, so that the user may browse relevant information one after another by a simple operation to the WWW browser. The document described in the HTML format is created with an assumption that this is generally browsed on a display screen. Since the display screen

has low resolution, an accumulation degree of information is kept low, and utilization of the link and dynamic change of the screen compensate the low accumulation degree.

[0004] In view of such a circumstance, a format other than the HTML format is generally used for representing a fine document suitable for printing, and the format used for such an object includes printer description language such as Laser Beam Printer Image Processing System (LIPS) (Canon, Inc.) and PostScript (Adobe Systems, Inc.), and Portable Document Format (PDF) (Adobe Systems, Inc.) or the like.

[0005] Also, a client terminal device utilizing a personal computer requires an advanced knowledge such as setting of a computer environment as well as an operation of the WWW browser, and a level thereof is too high for a general user, so that a device in which a sense of discomfort felt by the general user is reduced by combining with broadcast data such as television broadcasting and is capable of using the WWW service only by a simple browser operation, such as the Internet television is realized.

[0006] With the information processor such as the Internet television, it becomes relatively easier that a broadcast provider provides relevant information (advertisement for a product, detailed information regarding sales of product), which are not be sufficiently provided only by broadcast media, and also, the user may obtain more detailed information regarding the information of interest.

[0007]

[Problem to be Solved by the Invention] However, in the information processor such as the Internet television in which the broadcast data such as the television broadcasting and the WWW service are combined, in order to use the WWW service, it is required to interrupt viewing of the television broadcasting or to perform operation of the WWW browser while viewing the television broadcasting, and it is not possible to sufficiently view the contents of the television broadcasting with the operation while viewing the broadcasting due to loss of concentration. Therefore, there is a problem that excellent property of the television broadcasting to have only a little binding with the user is lost by the operation of the WWW browser. On the other hand, when giving priority to view the television, there is a problem that opportunity of receiving useful WWW service is missed.

[0008] The problems are due to bothersome operation of the WWW browser, and there is a room for improvement in sufficiently enjoy the broadcast data such as the television broadcasting and obtaining the information relating to the same without missing.

[0009] The present invention is made for solving the above-described problems in the conventional technology, and an object thereof is to provide an information processor, a method, and memory media, capable of printably obtaining the information relating to the contents of broadcasting as needed, while preventing the viewing of the broadcasting from being blocked, without requiring the bothersome operation.

[0010]

[Means for Solving the Problem] In order to achieve the above-described object, an information processor according to claim 1 of the present invention is an information processor for receiving broadcast data and receiving relevant data relating to the broadcast data, comprising: a positional information extracting unit that extracts positional information indicating a position of the relevant data relating to the broadcast data from the received broadcast data; a relevant data obtaining unit that obtains the relevant data based on the positional information extracted by the positional information extracting unit; a print adequacy determining unit that determines whether the relevant data obtained by the relevant data obtaining unit is suitable for printing or not; and an output unit that outputs the relevant data determined as suitable for printing by the print adequacy determining unit.

[0011] In order to achieve the same object, the information processor according to claim 2 of the present invention is the information processor according to claim 1, comprising a printing unit that prints the relevant data output by the output unit.

[0012] In order to achieve the same object, the information processor according to claim 3 of the present invention is the information processor according to claim 1 or 2, wherein the broadcast data includes text broadcast data, and the positional information extracting unit extracts the positional information from received teletext broadcast data.

[0013] In order to achieve the same object, the information

processor according to claim 4 of the present invention is the information processor according to claim 1 or 2, wherein the broadcast data includes image data, and the positional information extracting unit extracts the positional information by recognizing a text portion from a display screen on which the image data is displayed by a text recognition process.

[0014] In order to achieve the same object, the information processor according to claim 5 of the present invention is the information processor according to any one of claims 1 to 4, wherein the positional information is address information on a network, and the relevant data obtaining unit obtains the relevant data through the network.

[0015] In order to achieve the same object, the information processor according to claim 6 of the present invention is the information processor according to any one of claims 1 to 5, wherein when the print adequacy determining unit determines that the obtained relevant data is not suitable for printing, the unit obtains other relevant data by following link information included in the relevant data to determine whether the obtained other relevant data is suitable for printing or not, and the output unit outputs the other relevant data determined as suitable for printing by the print adequacy determining unit.

[0016] In order to achieve the same object, the information processor according to claim 7 of the present invention is the information processor according to claim 6, wherein hierarchy of the link information to be followed by the print adequacy determining unit for obtaining the other relevant data is

specified by a user.

[0017] In order to achieve the same object, the information processor according to claim 8 of the present invention is the information processor according to any one of claims 1 to 7, wherein a format of the relevant data to be determined as suitable for printing by the print adequacy determining unit is set by the user.

[0018] In order to achieve the same object, the information processor according to claim 9 of the present invention is the information processor according to any one of claims 1 to 8, comprising an informing unit that informs the user of presence of printable relevant data before the output unit outputs the relevant data, wherein the output unit executes output only when receiving an output executing instruction from the user.

[0019] In order to achieve the same object, the information processor according to claim 10 of the present invention is the information processor according to claim 9, comprising a display unit that preview-displays contents of the printable relevant data before the output unit outputs the relevant data.

[0020] In order to achieve the same object, an information processing method according to claim 11 of the present invention is an information processing method for receiving broadcast data and receiving relevant data relating to the broadcast data, comprising: a positional information extracting step for extracting positional information indicating a position of the relevant data relating to the broadcast data from the received broadcast data; a relevant data obtaining step for obtaining

the relevant data based on the positional information extracted in the positional information extracting step; a print adequacy determining step for determining whether the relevant data obtained in the relevant data obtaining step is suitable for printing or not; and an outputting step for outputting the relevant data determined as suitable for printing in the print adequacy determining step.

[0021] In order to achieve the same object, the information processing method according to claim 12 of the present invention is the information processing method according to claim 11, comprising a printing step for printing the relevant data output by the outputting step.

[0022] In order to achieve the same object, the information processing method according to claim 13 of the present invention is the information processing method according to claim 11 or 12, wherein the broadcast data includes text broadcast data, and the positional information extracting step extracts the positional information from received teletext broadcast data.

[0023] In order to achieve the same object, the information processing method according to claim 14 of the present invention is the information processing method according to claim 11 or 12, wherein the broadcast data includes image data, and the positional information extracting step extracts the positional information by recognizing a text portion from a display screen on which the image data is displayed by a text recognition process.

[0024] In order to achieve the same object, the information processing method according to claim 15 of the present invention

is the information processing method according to any one of claims 11 to 14, wherein the positional information is address information on a network, and the relevant data obtaining step obtains the relevant data through the network.

[0025] In order to achieve the same object, the information processing method according to claim 16 of the present invention is the information processing method according to any one of claims 11 to 15, wherein when the print adequacy determining step determines that the obtained relevant data is not suitable for printing, the step obtains other relevant data by following link information included in the relevant data to determine whether the obtained other relevant data is suitable for printing or not, and the outputting step outputs the other relevant data determined as suitable for printing by the print adequacy determining step.

[0026] In order to achieve the same object, the information processing method according to claim 17 of the present invention is the information processing method according to claim 16, wherein hierarchy of the link information to be followed by the print adequacy determining step in order to obtain the other relevant data, is specified by a user.

[0027] In order to achieve the same object, the information processing method according to claim 18 of the present invention is the information processing method according to any one of claims 11 to 17, wherein a format of the relevant data to be determined as suitable for printing by the print adequacy determining step is set by the user.

[0028] In order to achieve the same object, the information processing method according to claim 19 of the present invention is the information processing method according to any one of claims 11 to 18, comprising an informing step for informing the user of presence of printable relevant data before the outputting step outputs the relevant data, and the outputting step executes output only when receiving an output executing instruction by the user.

[0029] In order to achieve the same object, the information processing method according to claim 20 of the present invention is the information processing method according to claim 19, comprising a displaying step for preview-displaying the contents of the printable relevant data before the outputting step outputs the relevant data.

[0030] In order to achieve the same object, memory media according to claim 21 of the present invention is memory media for storing a program used in an information processing method for receiving broadcast data and receiving relevant data relating to the broadcast data, storing: a code of a positional information extracting step for extracting positional information indicating a position of the relevant data relating to the broadcast data from the received broadcast data; a code of a relevant data obtaining step for obtaining the relevant data based on the positional information extracted by the code of the positional information extracting step; a code of a print adequacy determining step for determining whether the relevant data obtained by the code of the relevant data obtaining step

is suitable for printing or not; and a code of an outputting step for outputting the relevant data determined as suitable for printing by the code of the print adequacy determining step.

[0031] In order to achieve the same object, the memory media according to claim 22 of the present invention is the memory media according to claim 21, storing a code of a printing step for printing the relevant data output by the code of the outputting step.

[0032]

[Embodiment of the Invention] Hereinafter, an embodiment of the present invention is described with reference to the drawings.

[0033] Fig. 1 is a block diagram showing a configuration of an information processor according to one embodiment of the present invention.

[0034] The processor is configured as a so-called Internet television, and is capable of receiving television broadcasting (broadcast data) to display on a screen and of downloading relevant data relating to contents of the broadcasting through an Internet by utilizing a WWW service. The relevant data includes, for example, an advertisement for a price, a distributor, and characteristics of goods and various pieces of information relating to the contents of the broadcasting.

[0035] The processor is provided with a tuner 2 and a communication device 18. An antenna 1 is connected to the tuner 2 to receive the television broadcasting. The television broadcasting includes teletext broadcasting. The

communication device 18 is connected to a communication line 16 connected to the Internet. Also, the processor is provided with an operation controlling unit 14, and the operation controlling unit 14 is connected to a remote controller 13, and to the tuner 2, a teletext broadcast data decoding unit 10, and a World-Wide Web (WWW) controlling unit 19 (relevant data obtaining unit and print adequacy determining unit).

[0036] A video circuit 3, an image synthesizing/switching unit 4, a display circuit 5, a display 6 (display unit) are connected in series to the tuner 2. A text data extracting unit 9, a teletext broadcast data decoding unit 10, and a teletext broadcast display unit 11 are further connected in series to the tuner 2. The teletext broadcast data decoding unit 10 is connected to the WWW controlling unit 19 through an Uniform Resource Locator (URL) extracting unit 12 (positional information extracting unit). The teletext broadcast data decoding unit 10 is further connected to a RAM 25. The teletext broadcast display unit 11 is connected to the image synthesizing/switching unit 4 and a VRAM 26. The video circuit 3 is connected to a text recognizing unit 8 through a digitizer 7. The text recognizing unit 8 is connected to the URL extracting unit 12 and the RAM 25.

[0037] The communication device 18 is connected to the WWW controlling unit 19 through a communication controlling unit 17. The communication controlling unit 17 is further connected to a hard disk (HD) 20 and the RAM 25. The HD 20, an LED (liquid crystal display device) 15 (informing unit), the RAM 25, the VRAM 26, a print image generating unit 21 (output unit), an image

display unit 24, and an image synthesizing/switching unit 4 are directly connected to the WWW controlling unit 19.

[0038] Also, to the print image generating unit 21, the HD 20, the RAM 25, and the image display unit 24 are connected, and a printer 23 (printing unit) is connected through a print controlling unit 22. The image display unit 24 is connected to the VRAM 26 and the image synthesizing/switching unit 4. The VRAM 26 is also connected to the image synthesizing/switching unit 4. The remote controller 13 is provided with a print starting button 13a, a list displaying button 13b, and an image displaying button 13c.

[0039] Various control programs and various data are stored in the HD 20. The RAM 25 temporally stores the various data and other than that, this is used as a work area when executing the programs.

[0040] When a user turns on this processor using the remote controller 13 and selects a preferred channel, a radio wave of the television broadcasting is received by the antenna 1, a specified channel is selected by the tuner 2, the received radio wave is converted to video data by the video circuit 3, screen-displayed on the display 6 through the image synthesizing/switching unit 4 and the display circuit 5, and is viewed as the television broadcasting.

[0041] On the other hand, a video signal input from the video circuit 3 to the digitizer 7 is digitized by the digitizer 7. The text recognizing unit 8 performs a text recognition process to digital image data input from the digitizer 7.

[0042] Herein, the URL (positional information) indicating a position (data position) on the Internet of the relevant data relating to the television broadcasting is sometimes sent as the teletext broadcast data, but sometimes the URL is sent as a part of a television screen and is only screen-displayed. The text recognizing unit 8 is for recognizing the URL out of a text picked out by the text recognition process when the URL is displayed on the display screen as an image.

[0043] The text data extracting unit 9 extracts text data from the teletext broadcast data input from the tuner 2. The teletext broadcast data decoding unit 10 decodes the text data extracted by the text data extracting unit 9. The teletext broadcast display unit 11 outputs decoded text data to the image synthesizing/switching unit 4, and the URL received as the teletext broadcast data is displayed on the display 6 as the text.

[0044] The text data decoded by the teletext broadcast data decoding unit 10 and the text obtained by the text recognition process by the text recognizing unit 8 are both input to the URL extracting unit 12. The URL extracting unit 12 extracts the URL of the relevant data relating to the television broadcasting from the text data or the text, and outputs the information to the WWW controlling unit 19.

[0045] The WWW controlling unit 19 controls access to the WWW service, accesses to the relevant data based on the input URL, and stores the relevant data downloaded from the Internet to the HD 20 and the RAM 25. The WWW controlling unit 19 further

determines whether the obtained relevant data is the data of a format suitable for printing or not.

[0046] The print image generating unit 21 develops the data of various formats to a print image to output to the print controlling unit 22. The developed print image is output from the image display unit 24 to the image synthesizing/switching unit 4 as needed, and is displayed on the display 6. Also, the developed print image is print-output by the printer 23 by control of the print controlling unit 22.

[0047] This processor downloads the relevant data as the file from the URL extracted while viewing the television, and when the file is suitable for printing, registers the same on a printable file list and informs the user of presence of the printable file by lighting an LED 15. The printable file list is stored, for example, in the HD 20. Specifically, the process is performed in the following manner.

[0048] Fig. 2 is a view showing a flowchart of a printable file list creation process. Fig. 3 is a view showing a flowchart of a link file extraction process executed at a step S205 in Fig. 2. These processes are executed by the WWW controlling unit 19.

[0049] First, access to the relevant data is performed using the URL extracted by the URL extracting unit 12 (step S201), the relevant data file is downloaded (step S202), and it is determined whether the relevant data file obtained by downloading is suitable for printing or not (step S203).

[0050] Herein, whether the file is suitable for printing or

not is determined based on the format of the file, and for example, the file written in printer description language such as Laser Beam Printer Image Processing System (LIPS) and PostScript, and a Portable Document Format (PDF) file are processed as suitable for printing. The format and type of the file, which should be determined as the format suitable for printing, are not limited to them and may be set by the user in advance. Therefore, this may be appropriately set according to a printing environment. The setting is performed by the user using the remote controller 13 and set contents are stored in the HD 20. Also, it may be configured that only the file containing style description using Cascading Style Sheets (CSS) and Extensible Stylesheet Language (XSL) or the like is determined as suitable for printing.

[0051] In this embodiment, it is configured that the file in Hyper Text Markup Language (HTML) format and in Extensible Mark-up Language (XML) format is determined to be not suitable for printing. However, it may be configured to include them as the formats suitable for printing.

[0052] As a result of determination at the step S203, when the obtained relevant data file is suitable for printing, this file is added to and registered on the printable file list (step S204) and the process ends.

[0053] On the other hand, as a result of determination at the step S203, when the obtained relevant data file is not suitable for printing, a link file extraction process in Fig. 3 to be described later is executed (step S205) and the process ends.

[0054] After the process ends, when there is the relevant data

file registered on the printable file list, the LED 15 is lit to inform the user of this. The user may display the file list as needed and may print the contents of the file, by pressing the list displaying button 13b, the image displaying button 13c, or the print starting button 13a of the remote controller 13. The LED 15 may be lit as long as there is the printable file, or may be lit for a certain period of time with respect to each addition of a new file.

[0055] Figs. 4 to 6 are views showing one example of the display screen of the display 6.

[0056] When viewing only general television broadcasting, a television screen (TV) as shown in Fig. 4(a) is displayed on the display 6. While viewing the television broadcasting, the user who recognizes that there is the printable file by lighting of the LED 15 presses the list displaying button 13b of the remote controller 13, a display of the display 6 overlaps with the television screen (TV) as shown in Fig. 4(b) and the list of the printable file is displayed in an area F1. The list of the file may be displayed in more detail in an area F2 as shown in Fig. 5, by operating the list displaying button 13b.

[0057] When the user presses the image displaying button 13c of the remote controller 13, the print image of the contents of the file may be previewed in the area F2 of the display 6 before printing, as shown in Fig. 6.

[0058] When the user wants to output on paper, contents of selected relevant data file are printed by the printer 23, by pressing the print starting button 13a of the remote controller

13. Thereby, it is possible to obtain required relevant data as a printed matter by an easy operation.

[0059] Referring again to Figs. 2 and 3, at the step S205 in Fig. 2, a link file is extracted by a process in Fig. 3. That is to say, when the relevant data file obtained by downloading is the HTML format file or the XML format file, for example, the file in the format suitable for printing such as the PDF file might be obtained by following link information included in the file, so that in this case, the PDF file or the like obtained by following the link information is added to the above-described printable file list. It is possible to further follow the link information included in the file obtained by following the link information, so that hierarchy of the link information to be followed is set in advance so as to avoid an infinite process. The user makes the settings using the remote controller 13, and set contents are stored in the HD 20. As a condition of link hierarchy, there is a setting to follow only the link in the same host computer, or a condition setting to limit to only the link displayed in each frame when performing the display, in addition to simple hierarchy limitation.

[0060] In Fig. 3, first, the link hierarchy is calculated (step S301) to determine whether the condition of the set link hierarchy is satisfied or not (step S302). As a result of the determination, when the condition of the link hierarchy is not satisfied, this process ends, and on the other hand, when the condition of the link hierarchy is satisfied, the link file is extracted (step S303). That is to say, when the relevant data file obtained

by downloading is the HTML format file or the XML format file, for example, the file is interpreted by a parser, and the link file is downloaded using the link information included in the file as a clue.

[0061] Next, whether the link file obtained by downloading is suitable for printing or not is determined (step S304). As a result of the determination, when the obtained link file is suitable for printing (when this is the PDF file or the like), the link file is added to and registered on the above-described printable file list as the relevant data (step S305), and the process proceeds to a step S306. Thereby, even when the information directly relating to the broadcasting is not suitable for printing, other relevant data may be obtained from the link information.

[0062] On the other hand, as a result of determination at the step S304, when the link file obtained by downloading is not suitable for printing, the process proceeds to a step S307, and the extraction process of the link file is executed for the link file of the next level of hierarchy using the link information further included in the obtained link file as the clue, and the process proceeds to a step S306.

[0063] At the step S306, it is determined whether the link information is further included in the obtained link file or not, and as a result of determination, when the link information is further included, the process returns back to the step S303. Therefore, the processes are repeated up to a specified level of hierarchy. On the other hand, when the link information is

not included in the obtained link file, the process ends.

[0064] As a specific utilization example, in a cooking program, there is a case in which a program creator broadcasts a cooking demonstration via radio waves and publishes a detail of a procedure and a recipe of the cooking as the relevant data by the WWW service on the Internet as a file of the format suitable for printing, for example. The URL to access the relevant data file such as the recipe is displayed on the screen of the program or is transmit as the teletext broadcasting. Of course, both of them may be performed.

[0065] This processor extracts the URL by the above-described process and automatically downloads the relevant data file from the Internet, and lights the LED 15. When the user who sees this wants to know the recipe or the like, the relevant data such as the cooking procedure and the recipe provided by the program creator may be printed on paper by pressing the print starting button 13a of the remote controller 13.

[0066] According to this embodiment, it is configured to automatically download the relevant data file from the URL obtained from the television broadcasting, to inform by lighting the LED 15 when the data file is suitable for printing, and to print the contents of the file according to an instruction by the user, so that interruption of viewing of the television broadcasting and loss of concentration due to operation of the browser when obtaining the information relating to the contents of the broadcasting are avoided. Especially, since the information relating to the contents of the broadcasting may

be obtained not on the display 6 on which the television screen is displayed but in a form of printed matter on paper, this does not strongly bind the user, and the user may sufficiently enjoy the television broadcasting and obtain the information relating to the same without missing. Therefore, it is possible to certainly ensure obtaining of the required relevant information while preventing the viewing of the broadcasting from being blocked by eliminating the need for complicated operation by obtaining the information relating to the contents of the broadcasting as the printed matter as needed.

[0067] Further, since information intensity is increased by separately outputting on paper, this preferably compensates the information, which tends to be insufficient in the broadcast media. For example, by utilizing the same as the advertisement of the broadcast media, an advertiser may rapidly provide the detailed relevant information to the user attracted by the broadcasting, thereby preventing missing of sales opportunities. The user also has advantage of avoiding to miss opportunities to receive the useful WWW services.

[0068] Also, it is configured that the URL is extractable not only from the teletext broadcasting but also from the text obtained from the television display screen by the text recognition process, so that even when the teletext broadcasting may not be used, the clue to access to the relevant information may be easily obtained.

[0069] Further, it is configured that, when the relevant data is not suitable for printing, the link file is obtained using

the link information included therein as the clue and the link file is printable as the relevant data, so that even when the information directly relating to the broadcasting data is not suitable for printing, when there is information suitable for printing in other linked related information, this may be printed. Therefore, it is possible to enlarge a utilization range of a lot of Internet web sites in which a large amount of data suitable for printing is not published. Also, it is configured that the download of the link file is performed up to a set appropriate level of hierarchy, so that only the link file relating to the broadcast data to a certain degree may be obtained, thereby improving usability by eliminating redundant process.

[0070] In addition, it is configured that the file format to be determined as suitable for printing may be optionally set, so that this may flexibly respond to a novel file format and appropriate printing of the relevant information according to a printing environment may be ensured.

[0071] Further, it is configured that the contents may be previewed before actually performing printing of the relevant data and execution of printing is started by intension of the user, so that unnecessary execution of printing is avoided by giving the opportunity to determine in advance whether to execute the printing or not, thereby improving usability.

[0072] Meanwhile, when a sufficient storage capacity may be ensured in the RAM 25, the above-described printable file list or the like may be stored in the RAM 25 in place of the HD 20.

[0073] Meanwhile, although the television broadcasting is

described as an example in this embodiment, the present invention is applicable to a radio broadcasting, a satellite television broadcasting, a wired broadcasting such as cable television, and a moving image/sound distribution service or the like through the Internet, in addition to a general terrestrial broadcasting.

[0074] Meanwhile, although it is configured that a printing mechanism (print controlling unit 22 and printer 23) is provided in the processor in this embodiment, the printer 23 or the printing mechanism corresponding to the print controlling unit 22 and the printer 23 may be printably configured by being separately formed as a printing device and connected to this processor.

[0075] Meanwhile, although it is configured to always automatically extract the URL and download the relevant data while receiving the broadcasting in this embodiment, a mode setting unit that performs this only when necessary may be provided.

[0076] Meanwhile, in order to further reduce a manufacturing cost, it is possible that the URL is extracted only by the text recognition from the television screen or by obtaining from the teletext broadcasting. For example, when the configuration for the text recognition from the television screen is not provided, the digitizer 7 and the text recognizing unit 8 may be omitted. Meanwhile, when the URL sent as the teletext broadcasting is not required to be displayed on the display 6 as the text, the teletext broadcast display unit 11 may be omitted.

[0077] Meanwhile, a path to obtain the relevant data is not limited to the Internet, and the network capable of accessing

the related data by address information may be used.

[0078] Meanwhile, it goes without saying that the object of the present invention is achieved by supplying memory media in which a program code of software, which realizes the function of each of the above-described embodiments, is recorded, to the information processor (Internet television) and by reading and executing the program code stored in the memory media by the computer (or CPU and MPU) of the information processor.

[0079] In this case, the program code read itself from the memory media realizes the novel function of the present invention, and the memory media in which the program code is stored configures the present invention.

[0080] As the memory media for supplying the program code, for example, a floppy disk, a hard disk, an optical disk, a magnetic optical disk, a CD-ROM, a CD-R, a magnetic tape, a non-volatile memory card, and an ROM may be used.

[0081] Also, it goes without saying that not only a case in which the function of above-described each embodiment is realized by executing the program code read by the computer, but also a case in which the OS or the like running on the computer executes a part or all of the actual processing based on the instruction of the program code and the function of the above-described embodiment is realized by the processing is also included.

[0082] Further, it goes without saying that a case in which the program code read from the memory media is written in the memory provided on a function expansion board inserted in the computer and a function expansion unit connected to the computer,

and thereafter, the CPU or the like provided in the function expansion board and the function expansion unit executes a part or all of the actual processing based on the instruction of the program code, thereby realizing the function of the above-described embodiment is also included.

[0083]

[Effect of the Invention] As described above, according to the information processor according to claim 1, the information processing method according to claim 11, or the memory media according to claim 21 of the present invention, the information relating to the contents of the broadcasting may be printably obtained as needed, while preventing the viewing of the broadcasting from being blocked, without requiring the bothersome operation.

[0084] According to the information processor according to claim 2, the information processing method according to claim 12, or the memory media according to claim 22 of the present invention, by obtaining the information relating to the contents of the broadcasting as the printed matter as needed, obtainment of the required relevant information may be certainly ensured, while preventing the viewing of the broadcasting from being blocked, without requiring the bothersome operation.

[0085] According to the information processor according to claim 3 or the information processing method according to claim 13 of the present invention, the clue to the access to the relevant information may be easily obtained by utilizing the text broadcast data.

[0086] According to the information processor according to claim 4 or the information processing method according to claim 14 of the present invention, the clue to the access to the relevant information may be easily obtained from the text displayed on the screen, even when the text broadcasting may not be used.

[0087] According to the information processor according to claim 5 or the information processing method according to claim 15 of the present invention, the relevant information may be obtained by downloading through the network.

[0088] According to the information processor according to claim 6 or the information processing method according to claim 16 of the present invention, even when the information directly relating to the broadcast data is not suitable for printing, when there is another linked relevant information suitable for printing, this may be printably obtained.

[0089] According to the information processor according to claim 7 or the information processing method according to claim 17 of the present invention usability may be improved by optionally setting relevance of the obtained relevant information with the broadcast data.

[0090] According to the information processor according to claim 8 or the information processing method according to claim 18 of the present invention, the appropriate printing of the relevant information may be ensured by setting the format of the information being a print target depending on the printing environment.

[0091] According to the information processor according to

claim 9 or the information processing method according to claim 19 of the present invention, the usability may be improved by avoiding unnecessary execution of the output for printing.

[0092] According to the information processor according to claim 10 or the information processing method according to claim 20 of the present invention, the usability may be improved by avoiding unnecessary execution of the output for printing by giving opportunity of determining in advance whether to execute the output for printing or not.

[Brief Description of the Drawings]

[Fig. 1] Fig. 1 is a block diagram showing a configuration of an information processor according to one embodiment of the present invention;

[Fig. 2] Fig. 2 is a view showing a flowchart of a printable file list creation process;

[Fig. 3] Fig. 3 is a view showing a flowchart of a link file extraction process executed at a step S205 in Fig. 2;

[Fig. 4] Fig. 4 is a view showing one example of a display screen of a display;

[Fig. 5] Fig. 5 is a view showing one example of the display screen of the display; and

[Fig. 6] Fig. 6 is a view showing one example of the display screen of the display.

[Description of Reference Numerals]

1 antenna

2 tuner

6 display (display unit)

7 digitizer

8 text recognizing unit

9 text data extracting unit

10 teletext broadcast data decoding unit

11 teletext broadcast display unit

12 URL extracting unit (positional information extracting unit)

13 remote controller

14 operation controlling unit

15 LED (informing unit)

16 communication line

18 communication device

19 WWW controlling unit (relevant data obtaining unit, print adequacy determining unit)

20 hard disk (HD)

21 print image generating unit (output unit)

22 print controlling unit

23 printer (printing unit)

24 image display unit

25 RAM

Fig. 1

2 tuner

3 video circuit

4 image synthesizing/switching unit

5 display circuit

6 display

7 digitizer

8 text recognizing unit

9 text data extracting unit

10 teletext broadcast data decoding unit

11 teletext broadcast display unit

12 URL extracting unit

13 remote controller

14 operation controlling unit

17 communication controlling unit

18 communication device

19 WWW controlling unit

21 print image generating unit

22 print controlling unit

23 printer

24 image display unit

Fig. 2

start

S201 access to URL

S202 download file

S203 is this suitable for printing?

S204 add to printable file list

S205 extract link file

end

Fig. 3

start extracting link file

S301 calculate link hierarchy

S302 is link hierarchy condition OK?

S303 extract link file

S304 is this suitable for printing?

S305 add to printable file list

S306 is there still another link?

S307 extract link file

finish extracting link file

Fig. 4(b)

participants list

PDF format

Fig. 5

list of printable pages

title

oo-th Pacific Ocean yacht race competition outline

date of update: 21:05 August 21, 1999

size: 24KB

number of pages: 3

oo-th Pacific Ocean yacht race competition outline

PDF format

detailed agenda of competition

PDF format

participants list

PDF format

to be continued

Fig. 6

oo-th Pacific Ocean yacht race competition outline

oo-th Pacific Ocean yacht race competition

executive committee of competition

page 1, 3 pages in total

to be continued